FIG. 1

The nucleotide coding sequence (SEQ ID NO:1) and amino acid sequence (SEQ ID NO:2) of bovine lysozyme

atg aag gct ctc gtt att ctg ggg ttt ctc ttc ctt tct gtc gct $A_{ij} = A_{ij} + A$ II F A N Y gtc caa ggc aag gtc ttt gag aga tgt gag ctt gcc aga act ctq F E R C E L A R T' L Y Q G K V aag aaa ctt gga ctg gac ggc tat aag gga gtc agc ctg gca aac tgg ttg tgt ttg acc aaa tgg gaa agc agt tat aac aca aaa gct W L C L T K W E S S Y N T K aca aac tac aat cct agc agt gaa agc act gat tat ggg ata ttt or . cag atc aac agc aaa tgg tgg tgt aat gat ggc aaa acc cct aat Q I N S H W W C N F. T P H D C gca gtt gac ggc tgt cat gta tcc tgc agc gaa tta atg gaa aat A V D G C H V S C S E L M E N gac atc gct aaa gct gta gcg tgt gca aag cat att gtc agt gag E i ... $A = \{1, \ldots, K \in A \mid A \in \mathcal{F} \mid A \in \mathcal{F} \}$ caa ggc att aca gcc tgg gtg gca tgg aaa agt cat tgt cga gac cat gac gtc agc agt tac gtt gag ggt tgc acc ctg taa H D V S S Y V E G C T L *.

1. 18 18 18

. . .

FIG. 2 (sheet 1 of 4)

Nucleotide sequence of the plasmid p1044-BoLys

extends from nucleotides 5767 – 6211 of the viral vector; the sequence encoding bovine lysozyme, including the stop codon, is inserted as a PacI-Xhol fragment and is shown in lower case letters, underscored

CATCTAGGAA GTGGTTAATC AAACCAACGG CTGACTCTCA ACCTCAAGAG TGGGATGAGA GCATTAGAGA GACATTAGGA GATGTTTTT STATITITAC AACAAITACC AACAACAACA AACAACAGAC AACAITACAA TIACTAITIA CAATIACAAI GGCAIACACA CAGACAGCIA ACTGTCCGAG GAAACAACTC CTTGGTCAAT GATCTAGCAA AGCGTGGTCT TTACGACACA GCGGTTGAAG TGCTACCCGG GCGTATCCAG TGCTGCATGC GGGGGAAAA ACATGCGAAC GCGGCACTCT GACGAAATCA TCTAATATTC ACCTGGTTTT GCAATGGAAG TGGTTTCCCA TCCAAGGATT TCGATTCGAT TTTACCTGC TICGIAAGCA GAIGAGCICG GTCCATGACG CCAGCATGTG GGCAGGCGAC ATTGGTAGTT TCATCCGGAA TCATAGTTAT CTTCGTCGAA GCCTGCGCTT ATTCGATGTT ACTGGAATAT AGGGAGGAGC ATATGTACAC GCTAGAGAGA TACTTTCCAG TGAGTTCGGG CGTCAATTTG GITITATACT AGTCAATTAC CGCGCAAGGA AGTCTTAGTG TGAGAGCGGT CAGAGTTAAT ATTCATCATC CTGTGGACAT AGTCTGACAA TTGCTGGAGA AAACGGTGTG TTATCAGAGT TCATGAGCAA CIGCIGCGGI TCGTGACCGC AGGCCCAAGG TGAACTTTTC AAAAGTAATA AGCGAGGAGC AGACGGTTAT GATCTTTAGA ACCTTTCTAG TACCAGCCGA TTAATTACTG ATGTTTTGTC TACAATCCTT CAGAAGGTGC TCTGTCACAA AAGATTCATG TTTTAGTCAC ATAGTGAGCA TCAAAGATAC AGCTGCTATT GACCTTGAAA CCCGTCAAAA GTTTGGAGTC TTGGATGTTG ATTGAACTAT CTCGGTTCGA GAAGACGCTG ATATATGACA CTGCTTCTTG AAAAGTGTAG CTCCTTGAGG AGTAAGAGGA ACATACGCAA AAATCTTTGT AACAGGAAAC TACAAGGCCT GTGTTAAGGG ATAGTCGCGG GAGAAGGCTT TTAGCTGGTC GATICGITAA GCATCACTAT CATCTGTTCA GGTGGATTGC GAGAGTACTC ATGAAGGAGT GGCGACGGCA TAGCCTGGTA GAAAGCTCTT GGATGTGGAC CAAGTTTAGT GAGGCTCTTG AGTGACTGAG AGAATTATCG AGCGAAGGTT ACAGGATCAA TGGCCAGAGG AGAGTTACAA CGAGAGAATC ATCATGCGGC ACGAAGGCCA GAAAGACAGT AGAGGTTTAC TGTGGCCCAT TTTGGAGACT TACATITIAT AACACGCAAA AIGCCGIGCA IICGCIIGCA GCTACACAGC CTCCGAGAAC TTTTGCATCA TTTTGCATCG AGAAATTCCT TAAAGTTCAG CAAATGAAAA ACTTTATCGA TACTGATTAG CCGTGAAAGA ATGCACTTTC CAATGACGGC TGTGCAACAG GGTCCGAATG ACGACAGATT CGCTAGCTTT AGTTTCATAT TAGGCGGGAA CCTCTAATAG ACAGATACGC TGACCITITC TGTACAAAGG TCGACATTTC CATACCAGGC ATGCCATTGC CTTTCCACTT TCTTTAGAGC GAAGTTGACC CACATTCGAA AAGGATGACT GCATITCCCI GTGACCTTCC AAGGGTTCGA ACTTATGACA GAAGCATTIG TGCTATGCCG GGAGACAAGT TACTTCCCGG ACTTTTCTTT ACTCTTGCAA GTACCATTAT GTGATGTACA GCGAATGTTG GTGACAGCGA GGCAGAGTGT GGAGATAGAG ACCGTCCATG TGCCGTTCTA CCCAGATGTG CCAATCTTTG CATTIGAACG ACCTACTGAG TTTGCTGGAC CGGATCATTG CGTTCGAGAC CTTCCAAAAG GCAGCAATCA TTCGCGCGAT TAGAATAGAT TTACAAAAAG AAATGAGGGA TATGGTCATC AGTGCTTAAC CATTAACGGT GTTTGGGAAC TGATCTATAT AGAAACGGAA TGTCCATACG GTGCAAAACT AAGTTGAAGA CTAAGAACGA CGGGTCCGAT AGAAGATGGA AAATTCCCTA TCGTGTTCAC ATACTAAGCT TTTCGCTGGC CCACATCAGC AGTTTAACGC AATTCCAAAT CCAACCTGGA CAGTCCCCAA ATCAGCCGAT TGAGGAAAAA ACGCGTGTTT TTAAGTATGT GTAAGTTTTC ACGCATGGCA CGAGGGTAAT TCAGGGTGCC

And the state of t

FIG. 2 (sheet 2 of 4)

GACATGGCGA AACTCAGAAC TCTGCGCAGA CTGCTTCGAA TCCAGGGTTA ATTGATGAAG CGGAGACACA CAGCAGATIC TAAAAAGTCT GTTTCGCAGG TTAACCCCTA ACTGTTGTTA TTTACTATG GTCAAAGATT AACGCACCCG AGTTGTCTGG CATCATTGAT ATTGAAATA TTCAGTAGAG GGATTIGCCA GCAGTIGATC TITGCAGACG ATTGTGTACC CGAAGACTTC TTGGGAGAAG ATAAAAACTT GCATCTGGTA TCAAAGAAAG AGCGGGGACG GCCTTTTGCG TICAGAAGGI CICITIGIGA IGITGCIGIT ICGITGAACA TTACACACAG TIGGACGACG CIGTAIGGGA GGITCATAAG ACCGCCCCIC CAGGIICGII IGIITATAAA AGICIGGIGA agtatttgtc igataaagti cittitagaa gittgittai agaiggcici agtigitaaa ggaaaagiga átaicaaiga gittaicgac aatgagtcat tgtcaggggt gaacctictt aaaggagtta agcttattga tagtggatac gtctgittag ccggtttggt cgtcacgggc SAGTGGAACT TGCCTGACAA TTGCAGAGGA GGTGTGAGCG TGTGTCTGGT GGACAAAGG ATGGAAAGAG CCGACGAGGC CATTCTCGGA ccaagagtca igcaiggggi giigiigaaa cccacgcgag gaagiaicai giggcgciti iggaaiaiga igagcagggi giggigacai AAAGAAGCTC ACACAATAGC GAAATGCCAC AGATTTTTGT CTGGATATAT GAAGCAAAAC CTAAAGTTGA CTGACAAAAATGGAGAAGAT CTTACCGTCG ATGTTTACCC CTGTAAAGAG TGTTATGTGT TCCAAAGTTG ATAAAATAAT GGTTCATGAG GAGGTTATTC GACACGCAGA CCAATCGGAT ACTAGTTAGG CAAGTACTAC CGATGCAGGA TTCATTGAAT TGATTCGAGC TGTCTTGGAG GACAGAGGAT GCATTGTGTA TTACGATCCC AGAAATTCTT CTCAGGGATT TGATATGCAG CCACTAATAC CTATGGTACG AACGGCGGCA TGTTTCTTTG TGGAGAAAT AATCAAAGGA GTGGAATTTT CCGGGCTGTG GAAAAACCAA AGCACACGCT GTCAGTTCAA TGCGAAATTG CATATGTTTA GICAIGAGCA CIICTICGGI TGACTTTTAC CTGATGTTTC TCAAGGCACA CCTGTTCGCT GGTTGTAGAT AAGTTTTTG ATAGTTATTT GCTTAAAGAA AAAAGAAAAC CAAATAAAAA GAAAAGCAGG AACAGGTAAC AATAGGCCAG CTCGCAGATT TTGATTTTGT GGACACTICA ATCCAAACGG AGTACCCGGC TGGACAGTGT GACAGICAIG IGCCGAIGGA AGAATACGAG ATCTGGCGAA GATTGGGTTT TITCCAAAGG GIIGIGAGII ICCGGAIGIG CAACACICCG CGAAICITAI GIGCGAATIC ACGAGGTGGA GTGATATTTC TGATGCTGTT ACCATGAGGT TGACTGACAT TTGTTAGATA TGTATAAGGT TIGGAAGTIG CGCGGAAATG ATCAGAAGAC GGCAAGATCC CCAAAGACTG AGGCAATTAC CATTGGAAAC ACTGTGATCA TTGCTGCATG TTTGGCCTCG ATGCTTCCGA GAGACATACT TGTTTATTCC TGTGTTAATT TTCTTGTGGC GATGTCATTG GGTCGCATTG TGAGCTTACC AAAGACACCA GCGCAGATIG AGGATTTCTT CGGAGATCTC TCAAGGATTA TACCGCAGGT GGACGGAGTT TTTTGGGAAA TGAGGGCTTT CGATCTCAAA ACCCTTGCAT TAGCTCGTAC TGTTGCAGCG TCAAATCAAA TGTTTAAAAA ACAGTATGGA TACTTTTGCG GAAGATATGT AATACATCAC TGGTGCTAAA CACATCAAGG ATTGGGAACA CTTGGAGGAG TTTTGCCAAA AGTGCAAGGC AAGAAACTTT ACAGGAGATA CTGTGCATGA TCATGATGAA ACCCCGCCCA TAGAGAAACT TCTGTTGCTG CGCCTAAGGA CGATGATTAA CGTTGTTTAG CTGAGTCTGT TIGITCTIGI GGAAGCAAGC CACATGTTT CCAATCTTT TGAATAATTT AACAAAAGTT ACTGTGCAGT GATCAATGCA ATATTCGGCC AATGAATTCC GAGAAGAGTA GCTGTTAGCT AGCGCAAAGG TTAGTACCTG GITGALICTI GGATTCCCGT CATTATCTGA GTGATCAATC GATGTTCACA ATTAGAGATC TTCAAAGGTT AGCACCATGA AATTTAGTGG GCACAACCCA ITTGGAAACA AGGGCATAGA AAGACCACCC GGAGACAGCC ACTATTGGAA CGTTAAAACC TAGAGTTTCA CGATGTCACA CGGAGCCGCC AGGGTATTCA CATCATTGCA TGACTCGGTG CCCAGGCAAC TATGTCTAAG TAGATGGTTA CATGATTAAA CAAATCTCAG TCTGCTGTAC GCATGTCAGT AGATCTAATT GCATACTGGT AGTTAGTATC TGCTTTCAAG ATTTTGATGA AGTACAGACA TTTTCACAAG CAAAATACGA SCGATGATTG CGAAGGACAA CATACATCAA STIGICCAGC AGATGGTCGG CACCGGTCTC IGGATCCTTT GCATATTGGA GCCAGACTGG CTGCATCTTT AGTCTCTCAA ATTCAAAAAA TCACGACGIT STGACGATAG TCTCGAAACT ATTGTGCGTA ACGGAGAACC GGTTGATGTT AATTACAGAT ATAAGTGTCT

FIG. 2 (sheet 3 of 4)

CGTTGATGAG AATCGATGAT GATICGGAGG CTACTGTCGC CGAATCGGAT TCGTTTTAAA TAGATCTTAC AGTATCAT CTCCATCTCA GITCGTGTTC TTGTCATTAA TCTTACTACA CAGCAGCTGC AAAGAAAGA TTTCAGTTCA AGGTCGTTCC CAATTATGCT ATAAC¢ACCC AGGACGCGAT GAAAAACGTC GAAAAATAGT TAGTTAATAT TAGAAAIGTG AAGAIGTCAG CGGGTTTCTG TCCGCTTTCT CTGGAGTTTG TGTCGGTGTG agaaataata taaaattagg tttgagagag aagattacaa acgtgagaga cggagggccc atggaactta cagaagaagt ATGICCCIAT GICGATCAGG CITGCAAAGI IICGAICICG AACCGGAAAA AAGAG†GAIG ICCGCAAAGG AGTAGTGATC GGTCAGTGCC GAACAAGAAC TATAGAAATG TTAAGGATTT TGGGGGAATG AGTTTȚAAAA AGAATAATTT TGGCAAGITT TTCATGGAAG

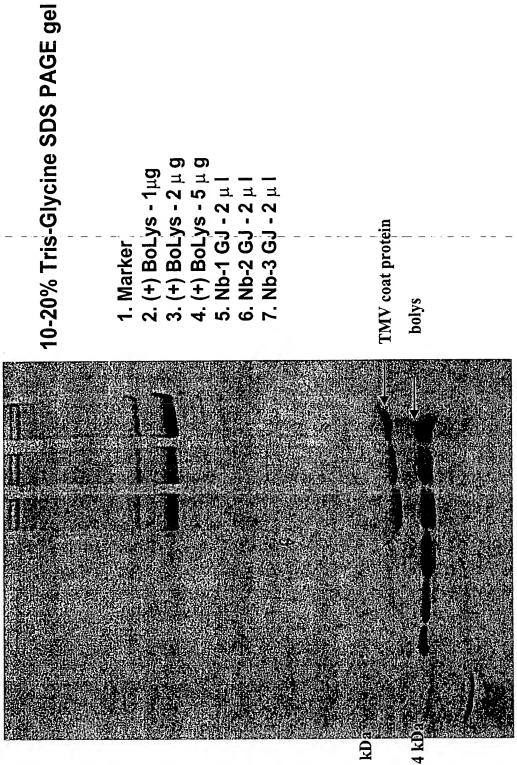
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FIGURE 2 (sheet 4 of 4)

CICCGCCCC CIGACGAGCA GGGGATAACG CAGGAAAGAA CCCTCGTGCG CACGCTGTAG AGATTACGCG AGTAAACTTG TCCCCGTCGT GTTGCCGGGA CGTTTGGTAT CATCCGTAAG CGTCAATACG TCTTACCGCT ATTGAAGCAT TTCCCCGAAA ACCATATGCG TATCCGGTAA GGTATGTAGG AGCCAGTTAC GGATTTTGGT GAGCAAAAAC TCGCGCGTTT GACAAGCCCG AAGGCGATTA AGTTGGGTAA CGCCAGGGTT TTCCCAGTCA CAGATTTATC TCGGTCCTCC CCTGGAAGCT TCTCATAGCT TCAGCCCAC CGCTGCGCCT TAACAGGATT AGCAGAGCGA GCTCTGCTGA TCACGITAAG AGTATATATG GTTGCCTGAC TCACCGGCTC TCACGCTCGT CAAAAAGCG GTTAGCTCCT CAGCACTGCA TAATTGTCTT ACTGTCATGC TCTTGCCCGG TTTCACCAGC GTTTCTGGGT TTTCAATATT GCCGGGAGCA TTCGCCATIC AGGCTGCGCA ACTGTTGGGA TGCAAGCAGC TCTATTAATT CTCTCAAGGA CCGCGCACAT CCCTTTCGTC CTGAGAGTGC GAGCGGTATC AGCTCACTCA AAGGCGGTAA TACGGTTATC CACAGAATCA TTTCCATAGG GCGAAACCCG ACAGGACTAT AAAGATACCA GGCGTTTCCC CGTGGCGCTT GTAGCGGTGG TTTTTTTGTT ATCAATCTAA GICTATITCG TICATGCATA TGATACCGCG AGACCGACGC CTCCATCCAG TTGCTACAGG CATCGTGGTG GTATGCGGCG ACCGAGTTGC ACTCTTCTT AAAATAGGCG TATCAGGAGG CGGCATCAGA GCAGATTGTA TGGTATCTGC GAACGAAAAC GGGCGAAAA AATAGGGGTT GTAAGCGGAT CTTCGGGAAG ACGCTCAGTG AAAATAAACA TGCTGGCGTT AACCCCCCGT GGACAGTATT GAAGTTTTAA CTTTATCCGC CCATGTTGTG AACGTTCTTC CATCTTTAC GAATACTCAT CAGCTTGTCT CAGCCACTGG GAACCGTAAA AAGGCCGCGT TGTGTGCACG TTAACCTATA GCCTTTCTCC CGACTTATCG CCACTGGCAG TACACTAGAA ACGGGGTCTG AGTGCTGCAA GGTCCTGCAA TGGCCGCAGT GTTATCACTC ATGGTTATGG CAAGTCATTC TGAGAATAGT AAAAGIGCIC AICAIIGGAA TGATCTTCAG AATGCCGCAA AAAAGGGAAT AAGGGCGACA CGGAAATGTT CATATITGAA TGTATITAGA GCAGCTCCCG GAGACGGTCA GCGTAAGGAG AAAATACCGC ATCAGGCGCA CTTCGCTATT ACGCCAGCTG GCGAAAGGGG GATGTGCTGC ACCACCGCTG GATCCTTTTA AATTAAAAT GTTGTTGCCA ACATGATCCC CTTAACTATG TCAGCGATCT CGACGTIGTA AAACGACGGC CAGTGAATIC AAGCTTAATA CGACTCACTA ATACCTGTCC TAACTACGGC TATCATGACA TIGGCGGGIG ICGGGGCTGG ATCTGGCCCC GCGCAGAAGT TTTGCGCAAC CCCAACGATC AAGGCGAGTT AGTICGAIGT AACCCACICG IGCACCCAAC CAAGCTGGGC CGGCAAACAA GATCTTTTCT GGCACCTATC AAAAGGCCAG CGCTTACCGG ACGATACGGG AGGGCTTACC GTCAGAGGTG TCGTTCGCTC CGGTAAGACA GAAGGGCCGA AGTGGTGGCC TCTTCACCTA AGAGTIGGIA GCICTIGAIC TAATCAGTGA CAGTTAATAG AGTACTCAAC TGAGCGGATA GACGICTAAG AAACCAITAI AAGATCCTTT GCAGAACTTT TCTGACACAT CICGGICGII CGGCIGCGGC GGATCTCAAG AAAGGCCAGC CCGACCCTGC TCGGTGTAGG TCAAAAAGGA CAGCCAGCCG AGAAGTAAGT GCGCCACATA TATTGTCTCA GGTGAAAACC TCAGCGGGTG ccgcacagat CGACGCTCAA GAGTCCAACC GAGTTCTTGA TACCAATGCT AGTAGTTCGC AGCTCCGGTT GTGACTGGTG CATGTGAGCA CGGTGCTACA CTTCGGAAAA GTCTGACAGT TCACAAAAAT CTCTCCTGTT GTATCTCAGT CTATCGTCTT CATGAGATTA GTAGATAACT AGCAATAAAC AGCTAGAGTA GGCTTCATTC GATCGTTGTC GTTGAGATCC AGGAAGGCAA CAGAAAAAA ATGCTTTTCT TATCAGGGT GTGTGAaata GGATAATACC AGTGCCACCT CGGTGATGAC TCAGGGGGGG STGCGGGCCT

Replicase subunits SP-E SP-1

SP-2



TMV coat protein

Fig. 4

14% Tris-Glycine SDS-PAGE gel

- 1. Marker

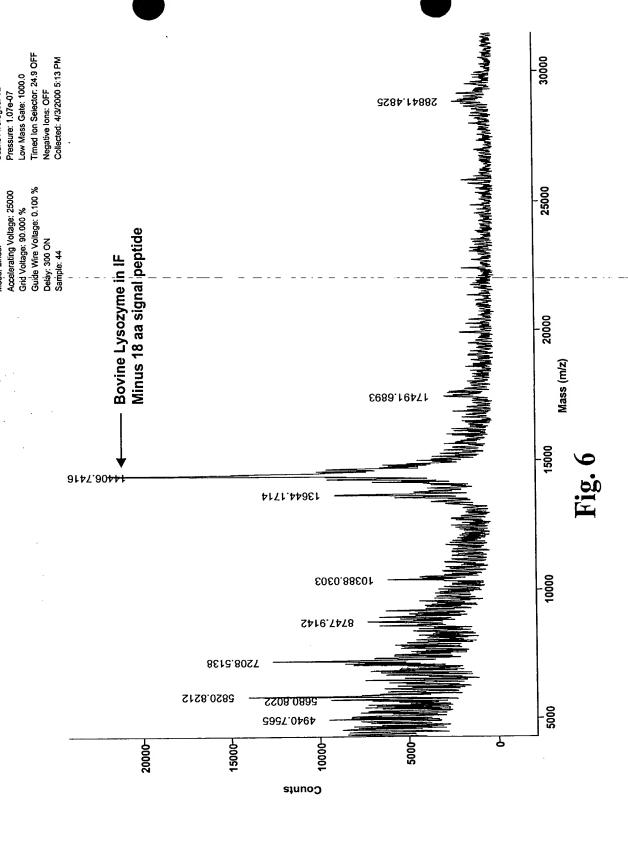
- 2. (+) Hen EW lys 5 μg 3. (+) BoLys 1 μ g 4. (+) Boys 2 μ g 5. (+) BoLys 3.5 μ g 6. (+) BoLys 5 μ g 7. (+) BoLys 7 μ g 8. 1051500 IF crude 1 μ l 9. 1051500 IF crude 5 μ l 11. 1051100 IF crude 5 μ l 11. 1051100 IF crude 5 μ l

TMV coat protein

bolys

20 kDa

Laser: 2350 Scans Averaged: 62



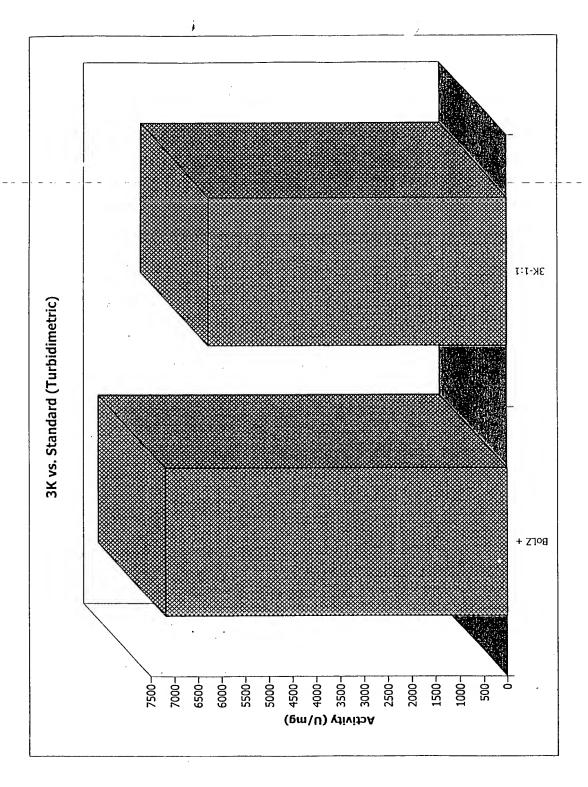


Fig. 7

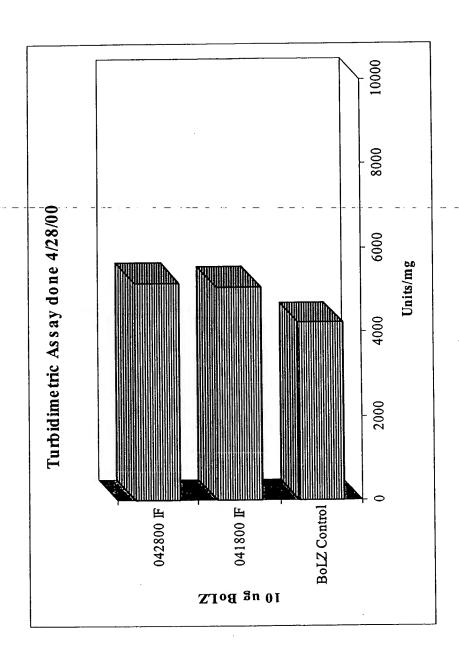


Fig. 8

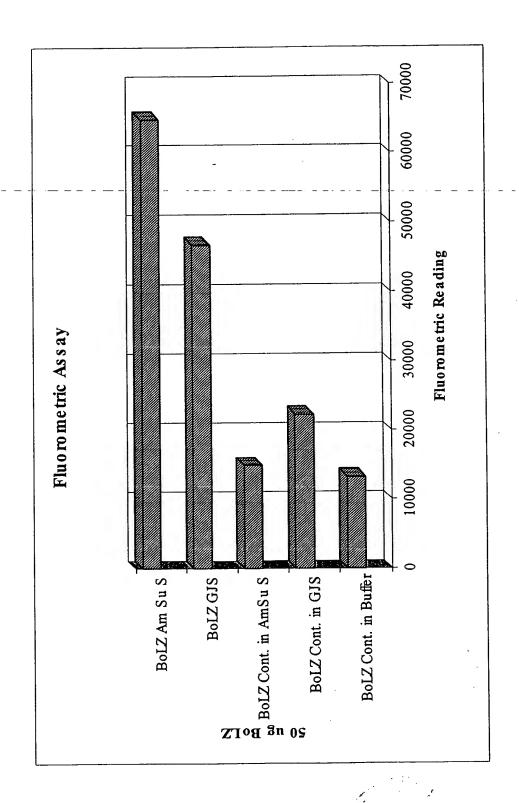


Fig. 9

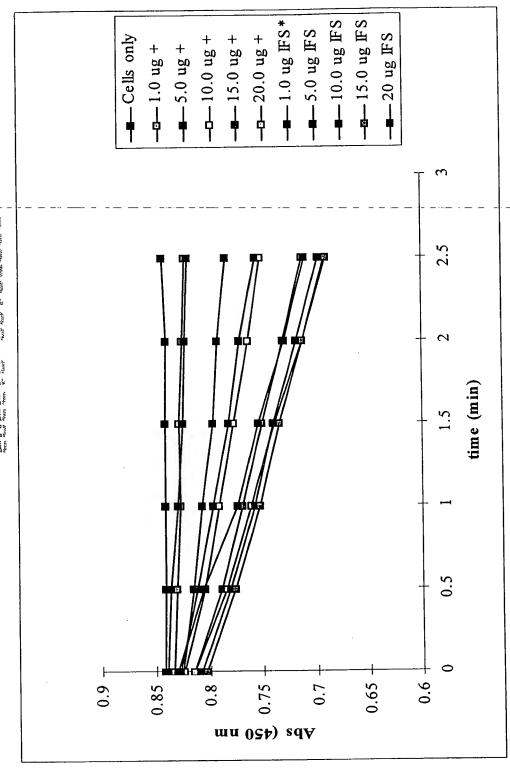


Fig. 10